

# AIRS/AMSU/HSB Data Disclaimer

Please read this before reporting problems with data or data availability. The following factors may have affected the data products you have ordered.

## ***Data Products***

All data are released to the public, but only the AIRS and Visible/Near IR L1B radiances and L2 retrieved Temperature Profile are provisionally validated. The retrieval products are a beta release only in the case of those data that satisfy the following conditions

- Low Latitude (within the latitude range 40° South to 40° North)
- Ocean (land fraction in the AMSU field of view is less than 0.01)
- Retrieved SST agrees with NCEP analysis to within 3.0 K
- Sun glint avoided (glint distance greater than 200 km)
- Full retrieval (MW-Only, FIRST and FINAL stages all acceptable)

Only full retrieval results satisfying these conditions should be studied. Researchers can easily limit their selection of Level 2 data products (Cloud-Cleared Radiance Product and Standard Physical Retrieval Product) to those satisfying these conditions by using the RetQAFlag swath data field in each Level 2 Product. **All fields of view whose RetQAFlag is zero satisfy these criteria.** Please refer to the document:

[V3.0 RetQAFlag.pdf.](#)

Fields in Level 1B and Level 2 data products may contain an invalid value:

- 9999 for floating-point and 16-bit and 32-bit integers
- 1 or 255 for 8-bit fields.

Please refer to the documents:

[L1B QA Quick Start.pdf](#)

[L2 QA Quick Start.pdf](#)

[Select AIRS QA Fields.pdf](#)

for additional quality assurance information.

The following description of the AIRS Data Product validation status is quoted from the document:

[V3.0 Validation Report.pdf.](#)

## Version 3.0 Level 2 Release AIRS/AMSU/HSB Data Disclaimer

While all AIRS / AMSU / HSB data are released in v3.0, only observed radiances are provisionally validated. The terms provisional, beta and validated are defined below.

**Beta** -- Early release product, minimally validated and may still contain significant errors. Available to allow users to gain familiarity with data formats and parameters but not appropriate as the basis for quantitative scientific publications. **Beta validated products in the Version 3.0 data release include microwave radiances and retrieved temperature and humidity fields.**

**Provisional** -- Product quality may not be optimal and incremental product improvements are still occurring. General research community is encouraged to participate in the QA and validation of the product, but need to be aware that product validation and QA are ongoing. Users are urged to contact science team representatives prior to use of the data in publications. Provisional products may be replaced in the archive when the validated product becomes available. **Provisionally validated products in the Version 3.0 data release include AIRS infrared and Visible / Near Infrared radiances.**

**Validated** -- Formally validated product, although validation is still ongoing. Uncertainties are well defined, and products are ready for use in scientific publications, and by other agencies. There may be later improved versions of these products. *No AIRS/AMSU/HSB products are fully validated as part of the Version 3.0 data release.*

### AIRS/AMSU/HSB Data Products Validation Status for Release 3.0

	Version	3.0
	Activation Date	7/1/03
<b>Radiance Products (L1)</b>		
	AIRS Radiance	<b>Prov</b>
	VIS/NIR Radiance	<b>Prov</b>
	AMSU Radiance	<b>Beta</b>
	HSB Radiance	<b>Beta</b>
<b>Standard Products (L2)</b>		
	Cloud-Clear IR Radiance	<b>Beta</b>
	Surface Temperature	<b>Beta</b>
	Temperature Profile	<b>Prov</b>
	Humidity Products	<b>Beta</b>
	Cloud Cover Products	<b>N/A</b>

*Beta* = Not suitable for scientific investigations. Consult with AIRS Project on regional status.

## Version 3.0 Level 2 Release AIRS/AMSU/HSB Data Disclaimer

*Prov* = Provisionally validated. Useable for scientific investigations with caution. Validated for nonpolar (  $|\text{lat}| < 40^\circ$  ) night ocean only

### ***Atmospheric Infrared Sounder (AIRS)***

The AIRS instrument entered 'operate' mode on 24 July 2002.

AIRS data are unavailable for the period 29 July 2002-14:14:13 to 30 August 2002-09:25:10 UTC because of instrument defrost activities and unexpected cooler shutdowns. (The shutdowns were apparently caused by ionizing radiation affecting the cooler electronics in the South Atlantic Anomaly.)

AIRS data are unavailable for the period 19 October 2002-17:03:5 to 22 October 2002-01:37:25 UTC due to a false overstroke trip by the AIRS cooler (likely caused by a radiation 'hit').

#### **AIRS IR Liens**

- The static channel properties files are known to be incomplete in their characterizations. In particular, some channels may pop which are not listed as popping channels.
- The excluded channel list is not fully optimized. Consequently **CalScanSummary** and **CalGranSummary** may include information from channels known to misbehave.
- Probable geolocation offset by ~2km in the cross-track direction

#### **AIRS VIS/NIR Liens**

- There appear to be low-level signals in the VIS/NIR calibration and blackbody views, where none are expected. Neither is deemed serious at this time. Specifically:
  - The last sample of the blackbody in zero-based Channel 2. This occurs day and night, and is at the fraction of a DN level.
  - The last one or two samples of the photocalibrator assembly (when the lamps are off) in zero-based Channel 1. This appears to occur during parts of every daytime granule, and has not been seen at night. It is at the 1 to 10 DN level.
- In each scanline, at the left edge of the swath (first 3 IR footprints), the first few detectors of Channel 4 (the ones furthest South in ascending granules) have anomalously low values, less than 10% of their expected value. Since Channel 4 is primarily intended for use in a research product (energy balance studies) and the swath edges are of limited value, this problem is not considered critical.
- In the L2 Retrieved Support Product, the following fields related to cloud height have not been validated and should be ignored:  
**CldHgtMapVis, CldHgtCntVis, CldHgtCntVisErr**

## ***Advanced Microwave Sounding Unit (AMSU)***

### **AMSU Liens**

- AMSU channel 7 exhibits abnormal noise levels
  - Noise level is about 5x NEdT on the average, but varies substantially
  - The added noise is not random; probable cause is spacecraft transmitter interference
  - The underlying random noise (NEdT) is within specs
  - Channel 7 should not be used until this systematic noise can be removed
- AMSU channel 6 exhibits some of the same noise characteristics as channel 7, however
  - Added noise level is a fraction of NEdT; overall level still meets specs
  - Use channel 6 with confidence
- AMSU channel 9 radiometer counts exhibit sudden, large change (~0.1%) recovering suddenly or gradually after 1-3 minutes; typically appears once or a few times per day, possibly clustered; no other channels affected
  - The phenomenon is being characterized; cause as yet unknown
  - Negligible effect in most cases; use channel 9 with confidence
- There are some outages of data when the Moon enters space views. The processing software modification to remove this has been specified, but is not implemented in this data release.
- AMSU-A1 exhibits substantial scan asymmetry which produces scan-dependent negative bias in scene brightness temperatures
  - A left-right asymmetry is present; the left swath edge exhibits a warm bias
  - Probable cause is asymmetric space/spacecraft radiative environment
  - Preliminary sidelobe correction coefficients have been computed from the antenna patterns measured on the ground and a simplified spacecraft model that takes into account mounting asymmetries
  - These corrections are currently being evaluated but have not yet been applied to the L1b products
- L1B data contain fields named “**antenna\_temp**” and “**brightness\_temp**”. Both are well calibrated and without sidelobe correction in this release. The **brightness\_temp** data field will include sidelobe correction in a future release. In this release the two fields are identical.

## ***Humidity Sounder for Brazil (HSB)***

HSB has not been operating since 5 February 2003-21:50 UTC.

### **HSB Liens**

- HSB exhibits substantial scan asymmetry which produces scan-dependent negative bias in scene brightness temperatures
  - A left-right asymmetry is present; the left swath edge exhibits a warm bias
  - Probable cause is asymmetric space/spacecraft radiative environment
  - No scene sidelobe corrections have yet been applied
- L1B data contain fields named “**antenna\_temp**” and “**brightness\_temp**”. Both are well calibrated and without sidelobe correction in this release. The **brightness\_temp** data field will include sidelobe correction in a future release. In this release the two fields are identical.

## ***Aqua Spacecraft Safing Events***

The Aqua spacecraft underwent two safing events. The AIRS / AMSU / HSB instrument suite did not collect data during the following periods (all times are approximate to several minutes): 27 June 2002-15:40 to 28 June 2002-20:36 UTC, and, 12 September 2002-13:31 to 23:24 UTC.

## ***Occasional Data Outages***

The AIRS / AMSU / HSB instrument suite has been shut down periodically for orbital correction maneuvers (drag makeup burns) and MODIS lunar calibration maneuvers. The table in the URL below lists all such outages up to June 17, 2003:

[20030617 Daily Status Log.pdf](#)